MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2017/2018 SESSION

TSE3251/TSV3561 – SOFTWARE VERIFICATION & VALIDATION
(All sections / Groups)

16 MARCH 2018
9.00 a.m – 11.00 a.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 pages with 5 Questions only.

2. Attempt all **FIVE** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please print all your answers in the Answer Booklet provided.

Question 1

a. Explain what would be the impact in terms of tangible and intangible loss, if defects in software are not fixed or removed even after released for use? [2 Marks]

b. State the relationship between software error, defect and failure. [1.5 Marks]

c. What is verification? Based on the V-model, indicate when verification is being carried out. [2 Marks]

d. What is validation? Based on the V-model, indicate when validation is being carried out? [2 Marks]

e. Describe FIVE characteristics of a good test case. [2.5 Marks]

Question 2

a. Illustrate with TWO examples, how testing could improve the quality of the software. [2 Marks]

b. One of the principles of testing is the "absence-of-error fallacy". Explain what this principle means? [1 Mark]

c. Identify FOUR defects or error prone situations which can be detected by static analysis of program codes. [2 Marks]

d. What is regression testing? Give one major objective of regression testing. [1 Mark]

e. With the help of a diagram, show how the different software construction phases are mapped to the various test levels. [Hint: V-model] [4 Marks]

Continued ......

Question 3

a. A program validates a numeric field as follows:
   Values less than 10 are rejected, values between 10 and 21 are accepted, values equal to or greater than 22 are rejected.

   i)   Provide THREE valid equivalence partitions.   [1.5 Marks]
   ii) Provide THREE values that belong to each of the valid equivalence partitions.
                                                                         [1.5 Marks]

b. An input field takes the year of birth between 1900 and 2004. Identify
   i)   TWO boundary values within the valid range.   [1 Mark]
   ii) TWO boundary values which are in the invalid range.   [1 Mark]

c. Based on the following decision table, Table 1, provide the expected result for each of the following test cases:
   i)   ABC Bank member holding a Silver card   [1 Mark]
   ii) ABC Bank non-member holding a Platinum card   [1 Mark]

Table 1

	Rule 1	**Rule 2**	**Rule 3**	**Rule 4**
Conditions				
ABC Bank Member	Yes	Yes	No	No
Card type	Silver	Platinum	Silver	Platinum
Actions				
Offer upgrade to Gold	Yes	No	No	No
Offer upgrade to Silver	Not applicable	Yes	Not applicable	No

d. Given the following state transition diagram, Diagram 1, identify THREE valid state transitions.   [3 Marks]
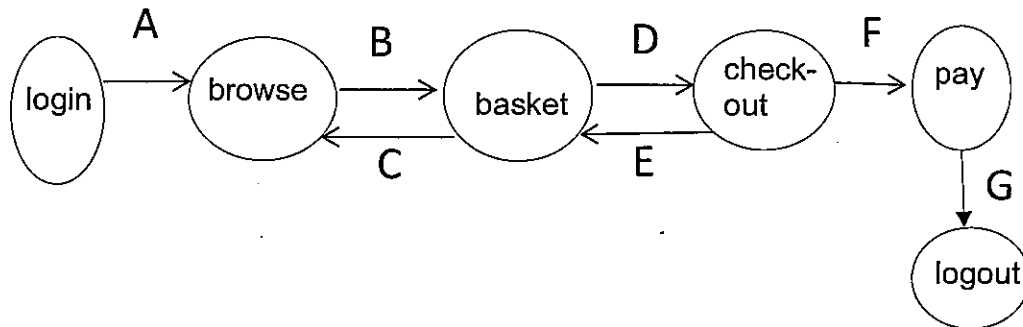

Diagram 1

Question 4

a. Provide TWO examples of experienced-based test design techniques.

[1 Mark]

b. Traceability during testing is the ability to identify related items in documentation and software such as requirements with associated test. Identify TWO benefits of traceability for testing.   [2 Marks]

c. Identify THREE benefits and THREE risks of using automated testing tool.

[3 Marks]

d. Risk in software could be a problem that might result in future negative consequences. Give TWO examples of project risk and TWO examples of product risk.   [4 Marks]

Continued ......

Question 5

a. Differentiate bewteen
    i)   black-box and white-box testing.   [1.5 Marks]
    ii) dynamic and static testing.   [1.5 Marks]

b. State the THREE important points related to development phase, test results and resources that have to be considered during test planning.   [3 Marks]

c. Describe FOUR types of review according to the degree of formality, from least formal to most formal.   [4 Marks]

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